

Figure 1 Conventional Noise Feedback Coding

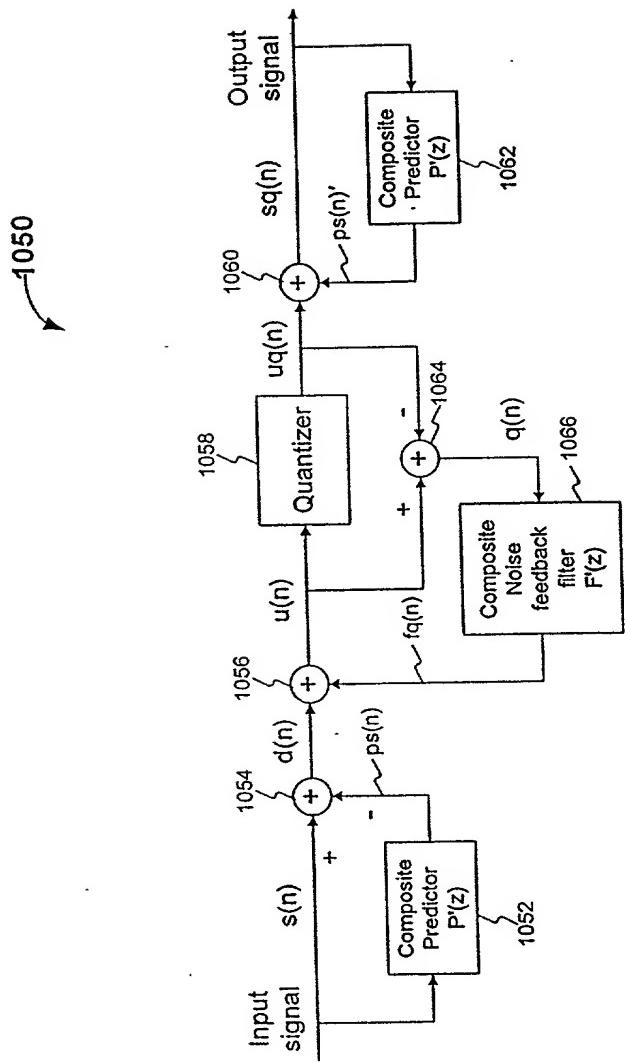


Figure 1A Noise Feedback Coding Using Composite Short-Term and Long-Term Predictors and Composite Short-Term and Long-Term Filter

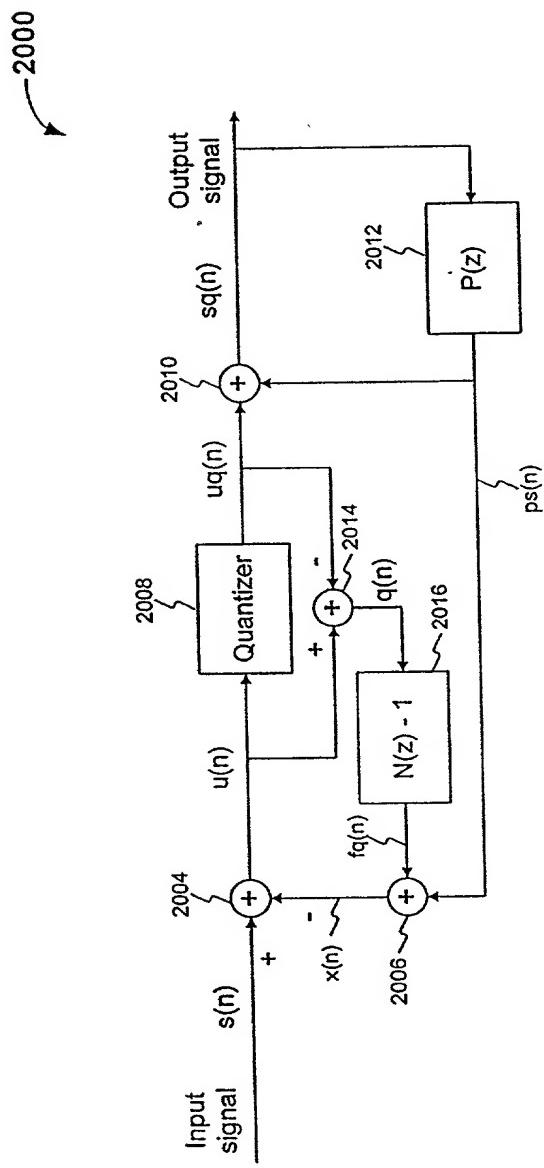


Figure 2 An alternative form of conventional Noise Feedback Coding

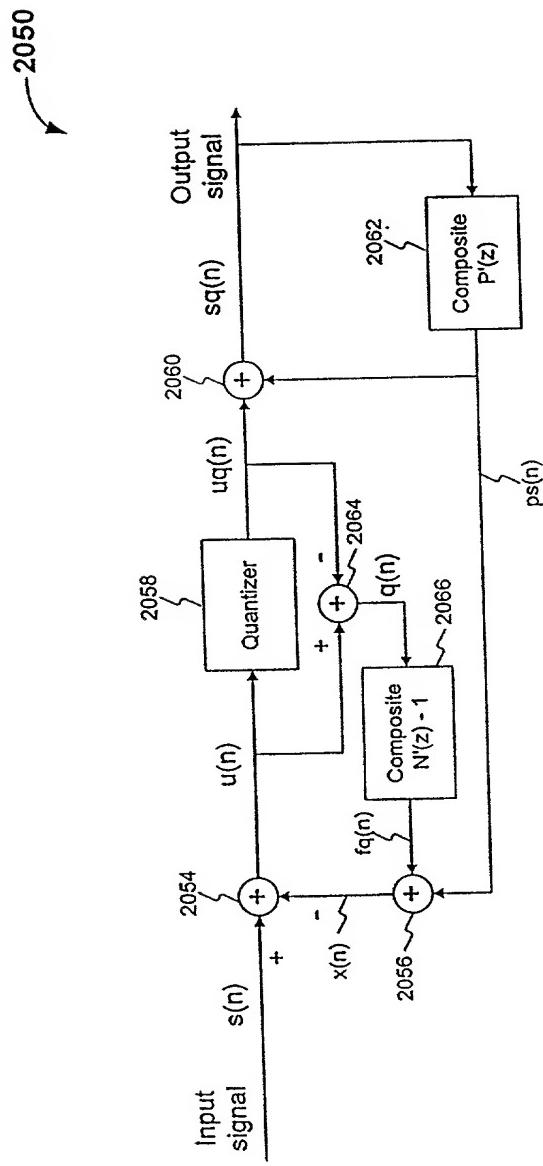


Figure 2A Noise Feedback Coding Using Composite Predictor and  
Composite Noise Filter

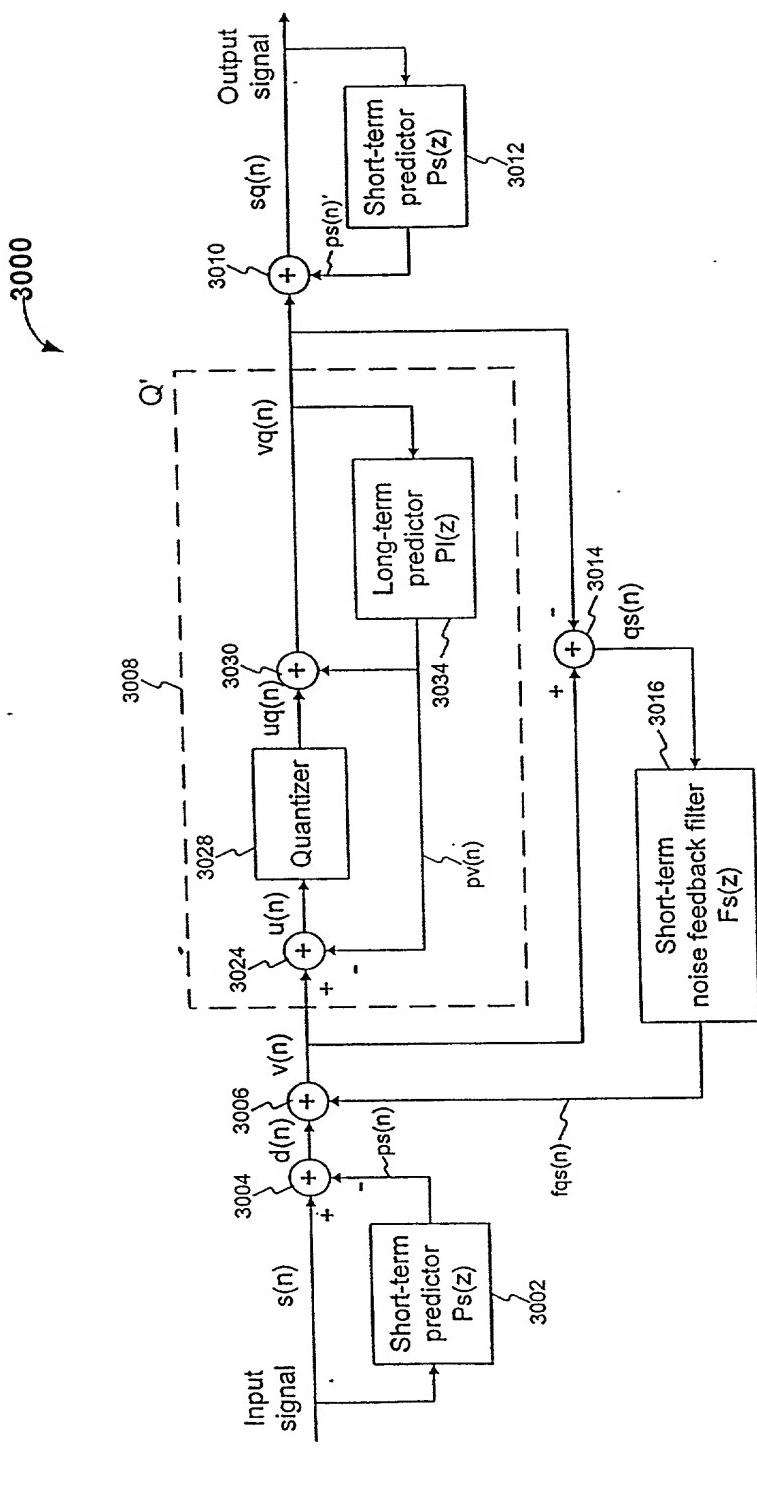


Figure 3 Noise Feedback Coding with short-term and long-term prediction but only short-term noise spectral shaping

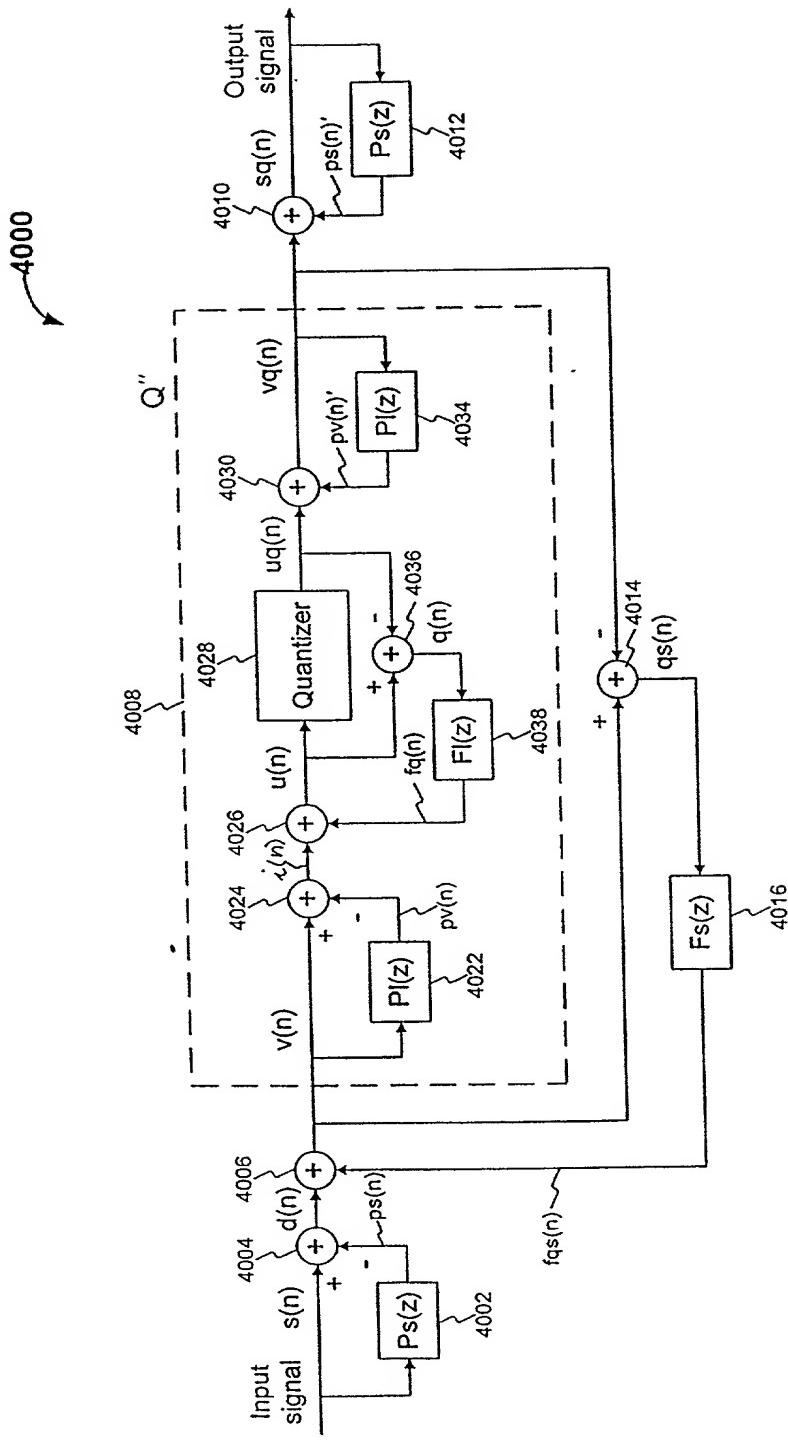


Figure 4 Nested two-stage Noise Feedback Coding structure with short-term and long-term prediction and short-term and long-term noise spectral shaping

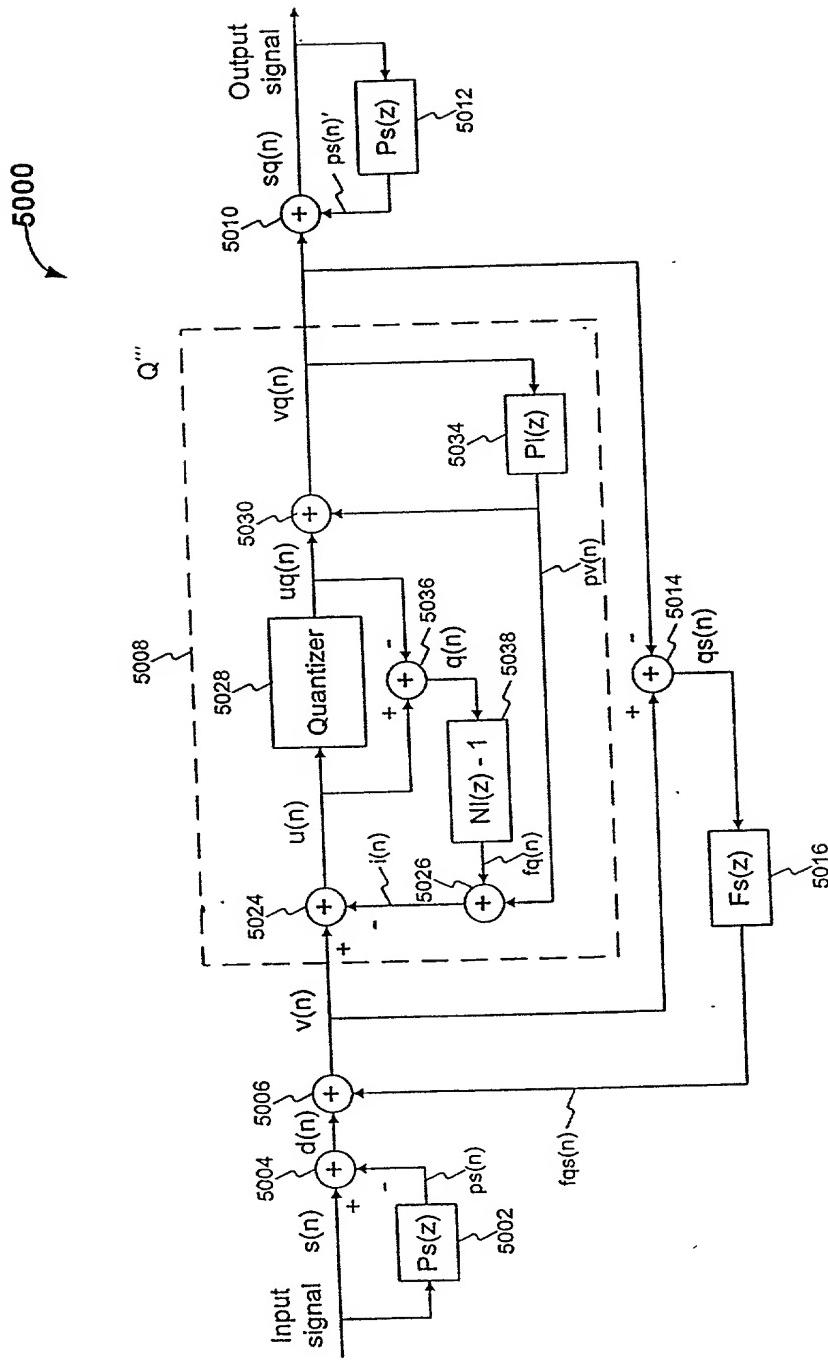


Figure 5 An alternative nested two-stage Noise Feedback Coding structure with short-term and long-term prediction and short-term and long-term noise spectral shaping

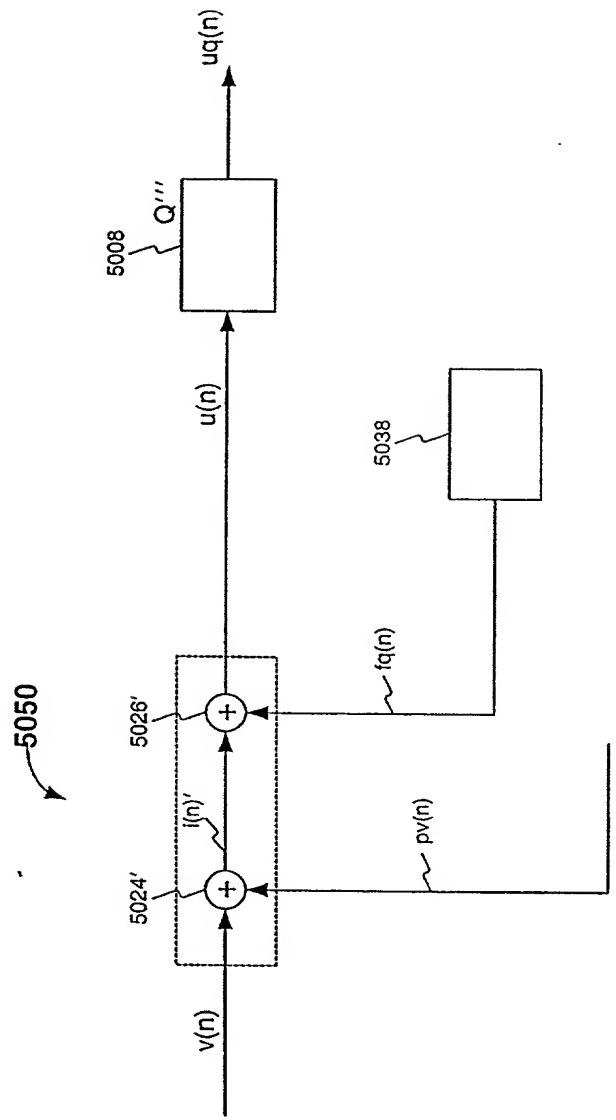


FIG. 5A

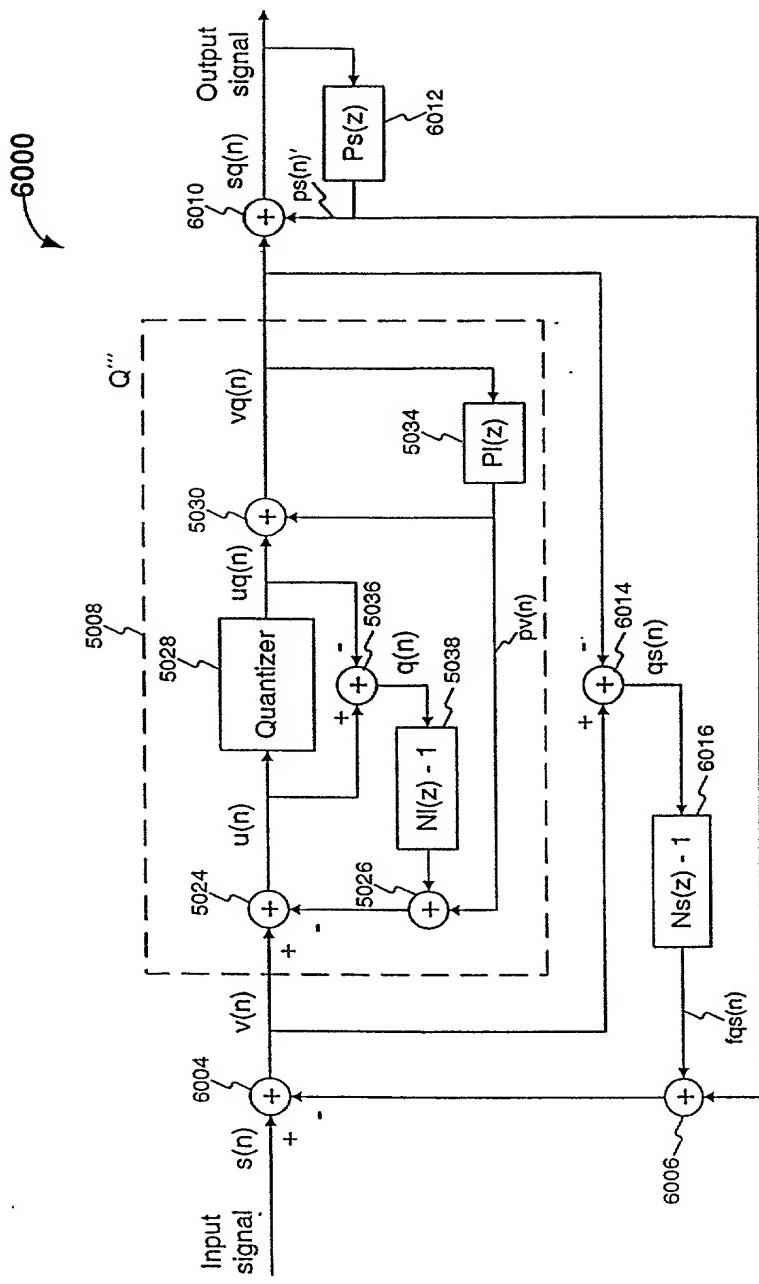


Figure 6 Another alternative nested two-stage Noise Feedback Coding structure with short-term and long-term prediction and short-term and long-term noise spectral shaping

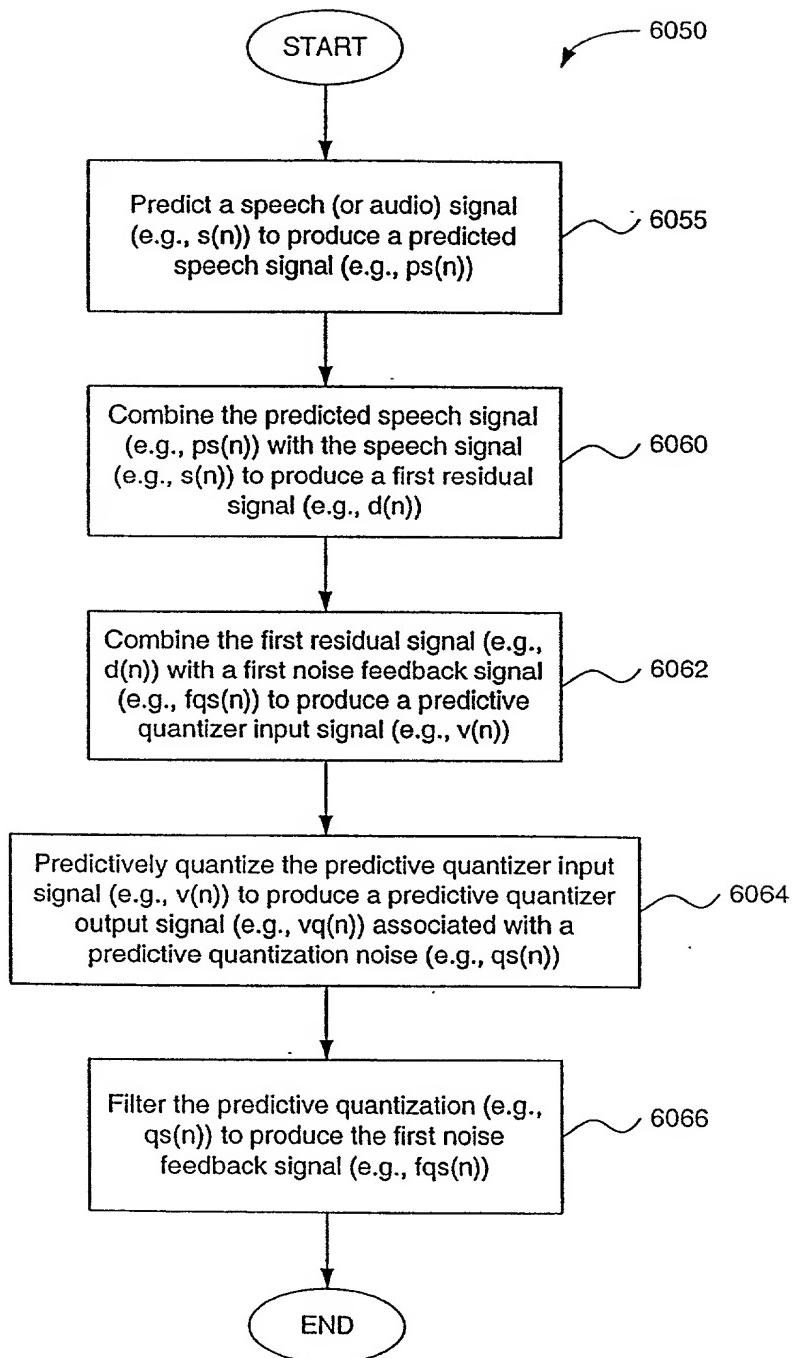
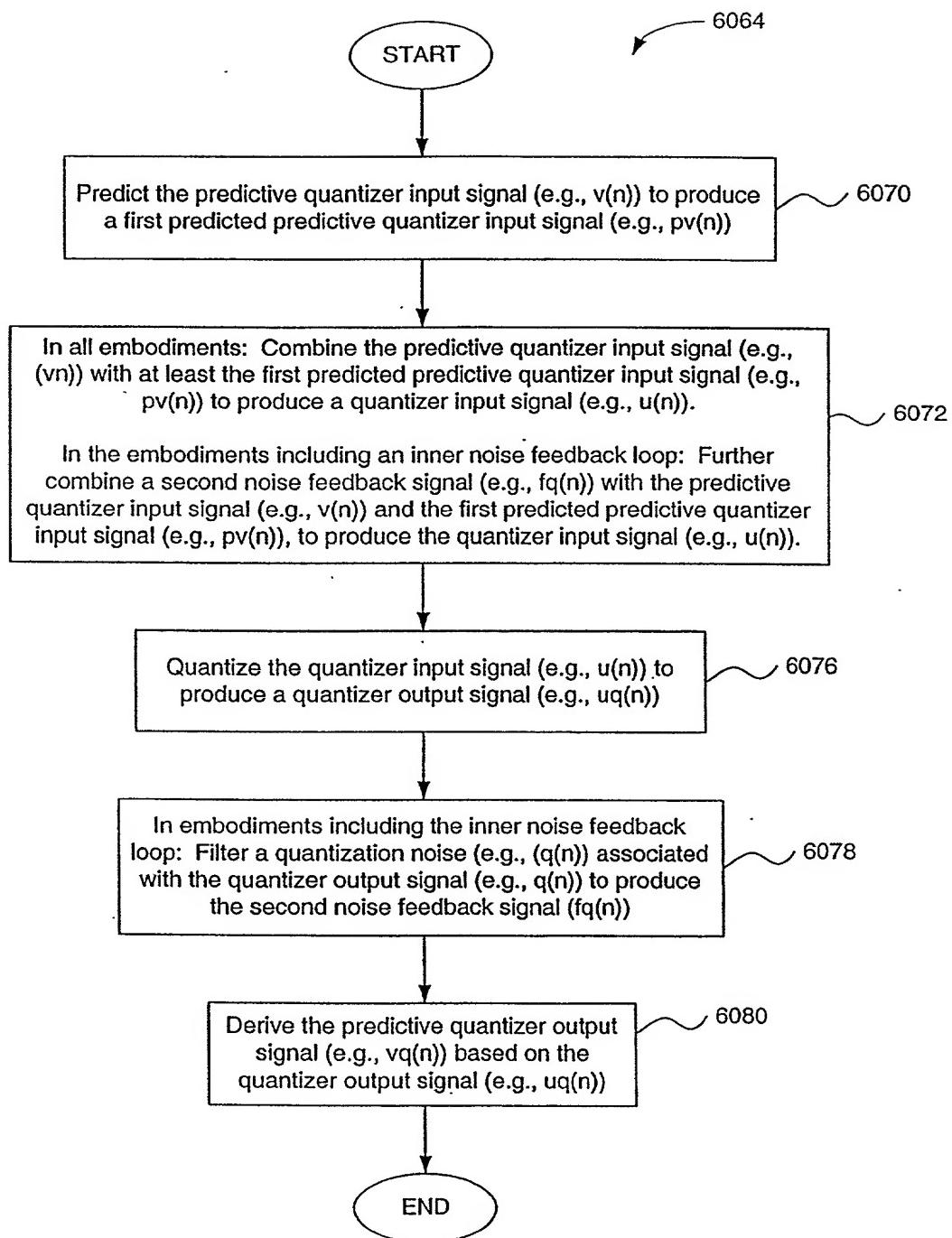


FIG. 6A



**FIG. 6B**

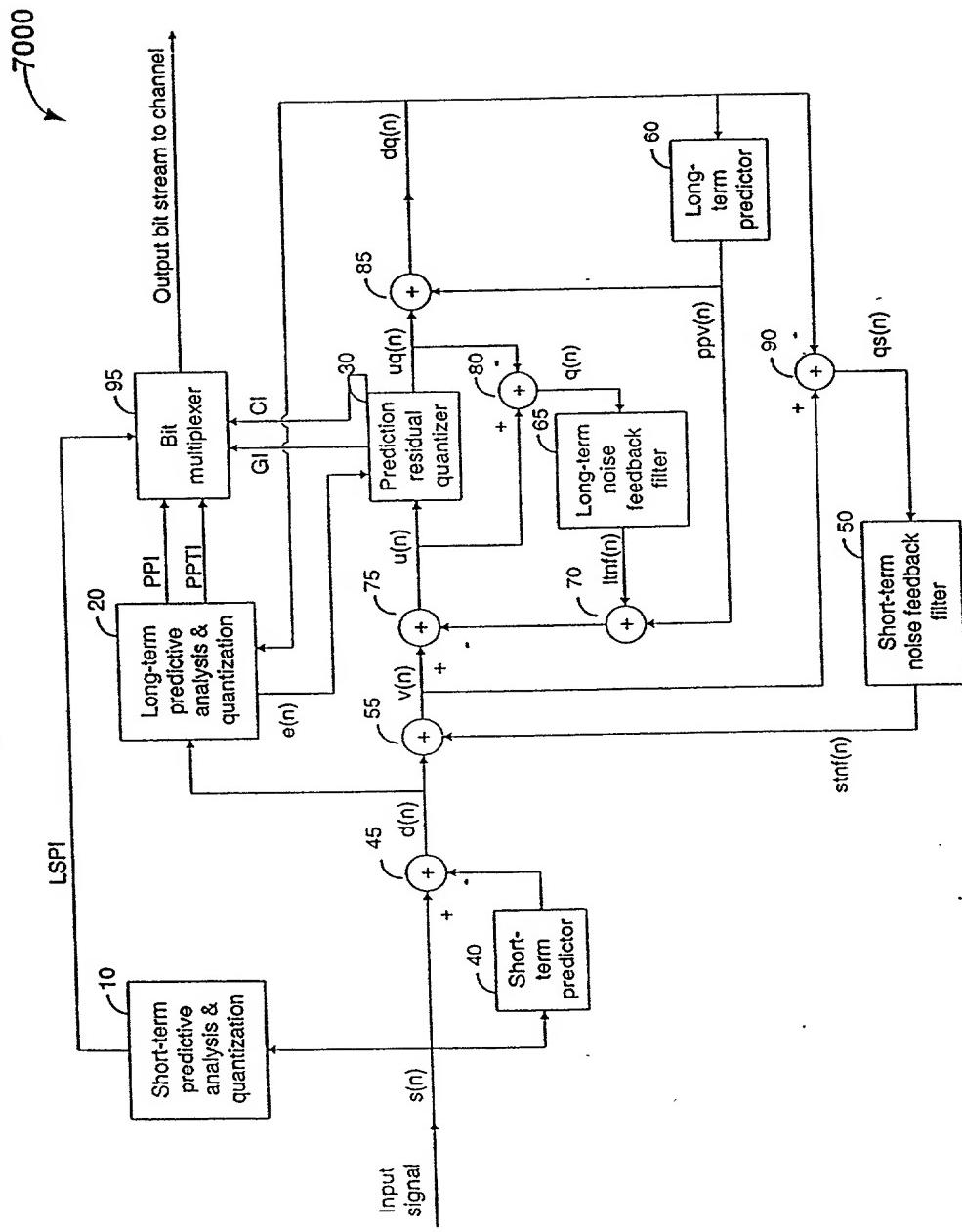


Figure 7 Encoder of a nested two-stage noise feedback codec (TSNFC)

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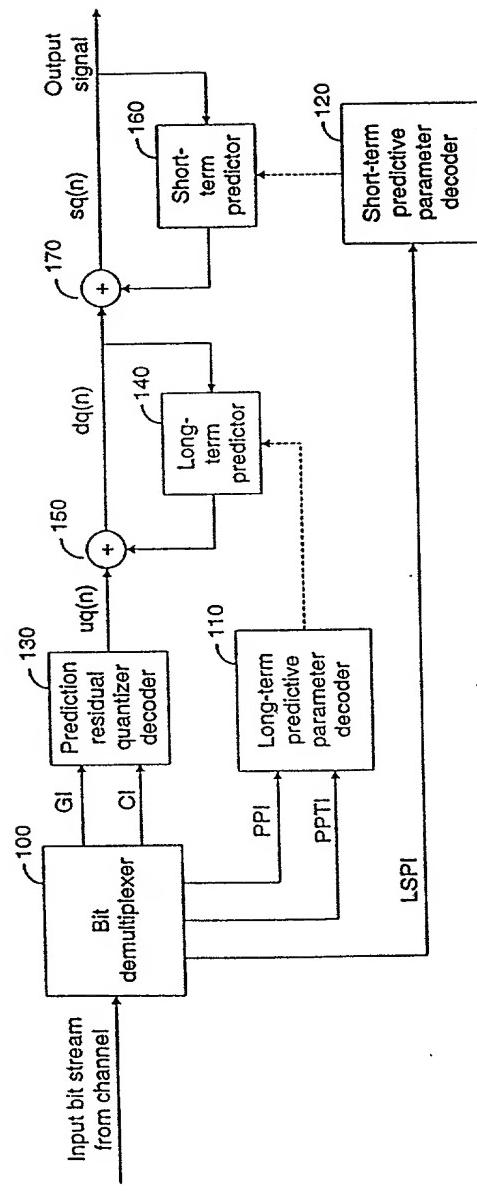


Figure 8 Decoder corresponding to the TSNFC encoder in Fig. 7

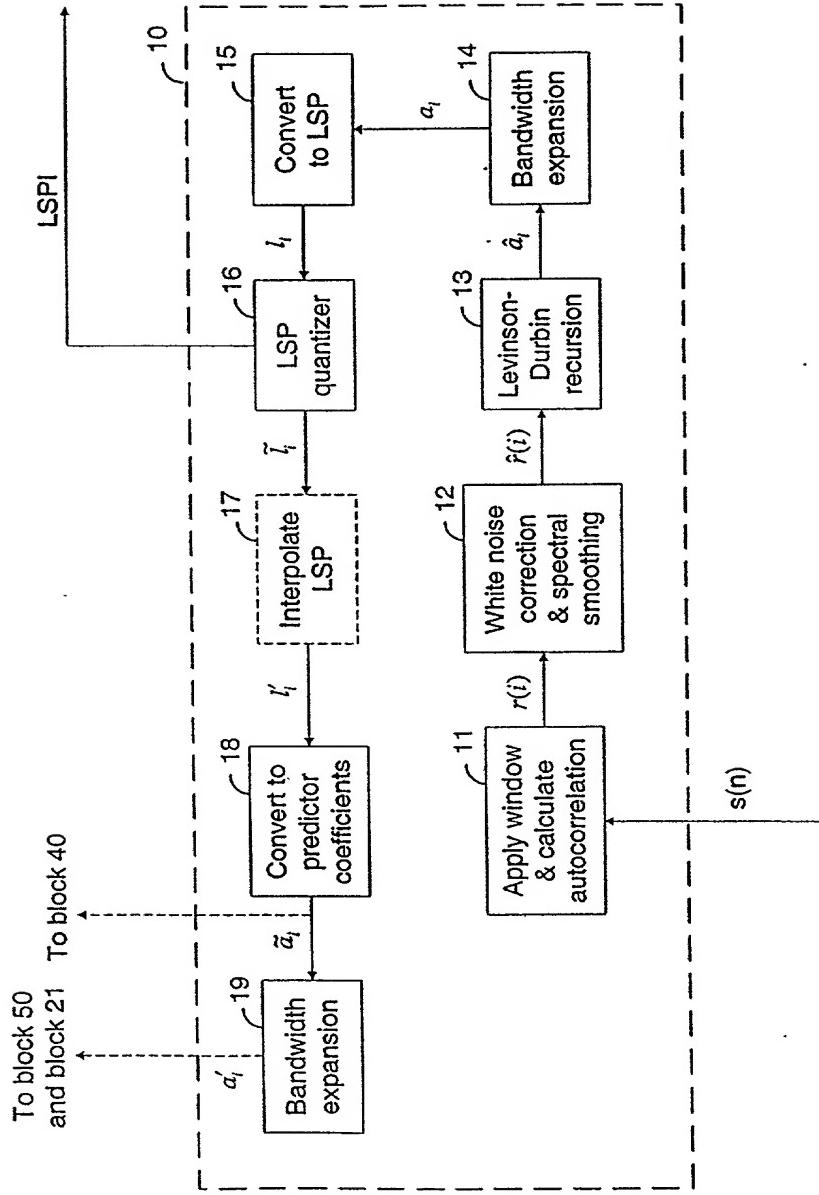


Figure 9 Short-term predictive analysis and quantization (block 10)

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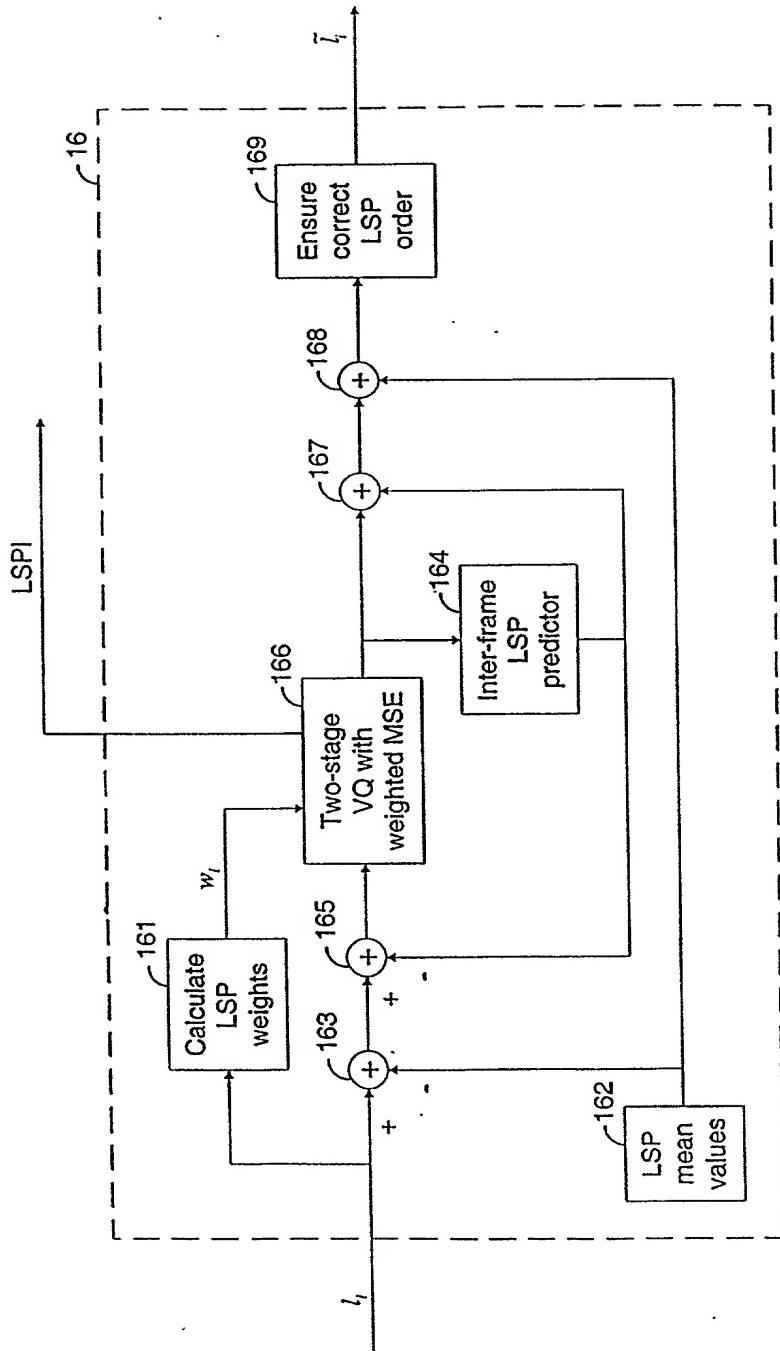


Figure 10 LSP quantizer (block 16)

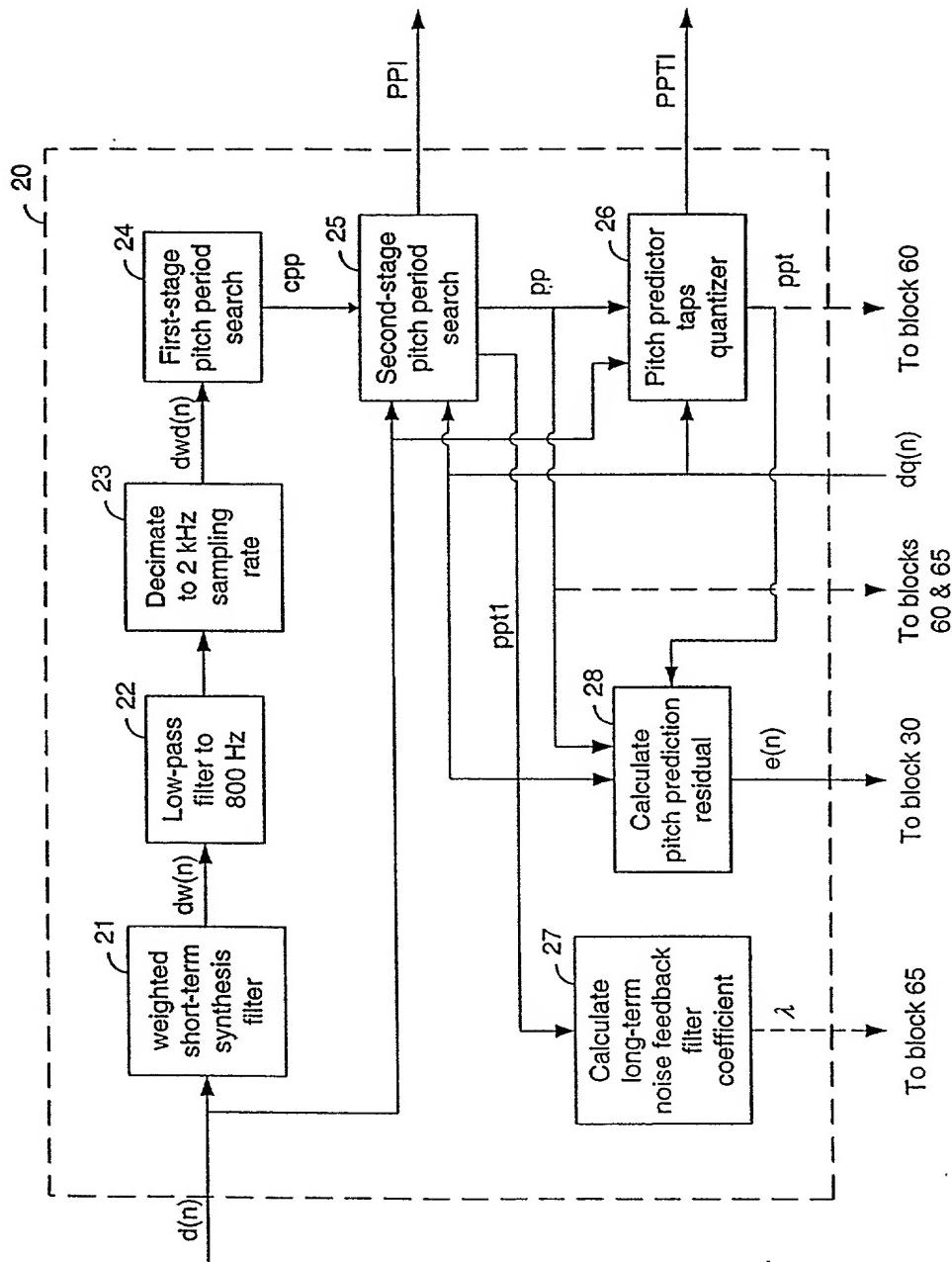


Figure 11 Long-term predictive analysis and quantization (block 20)

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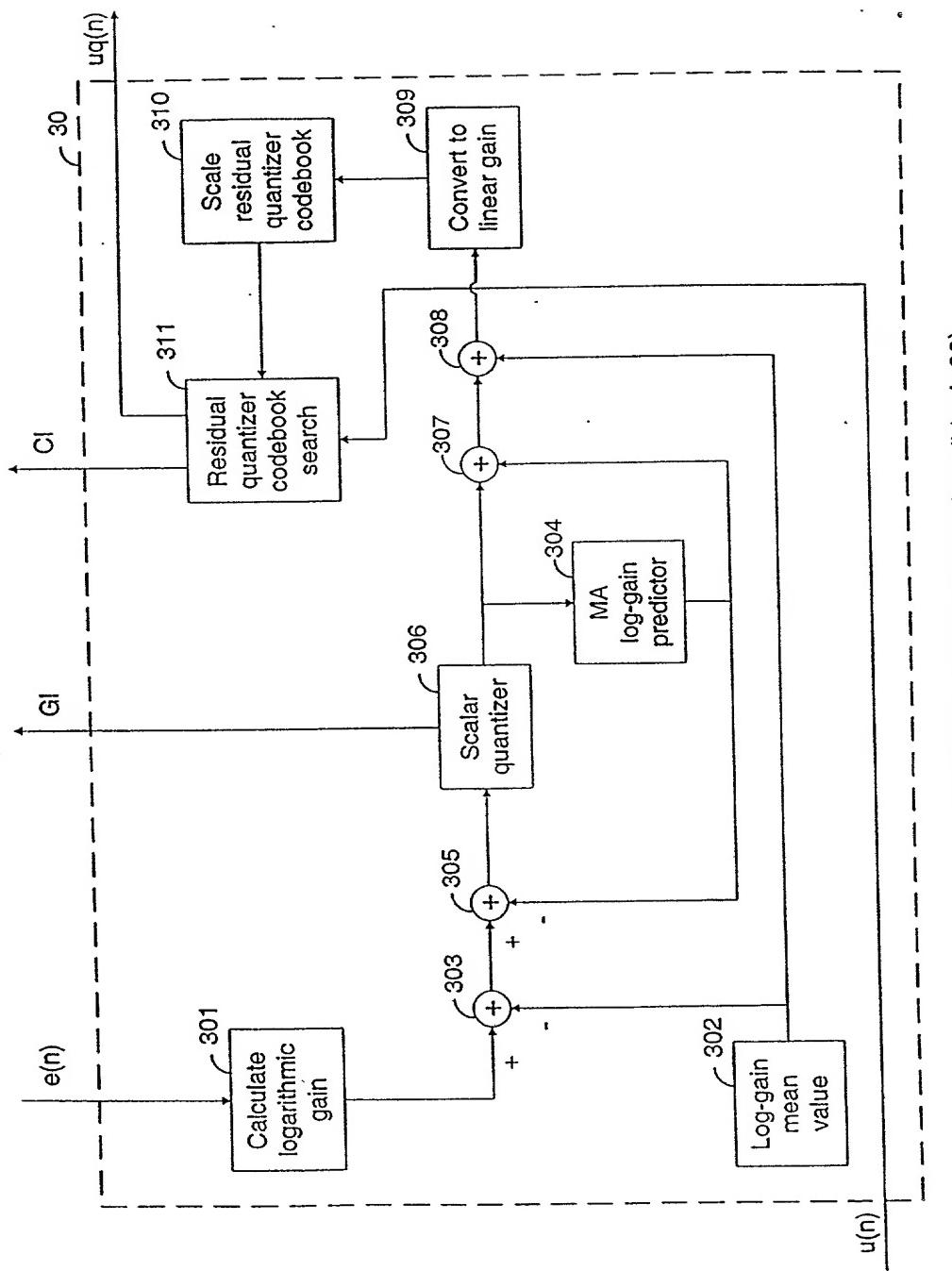
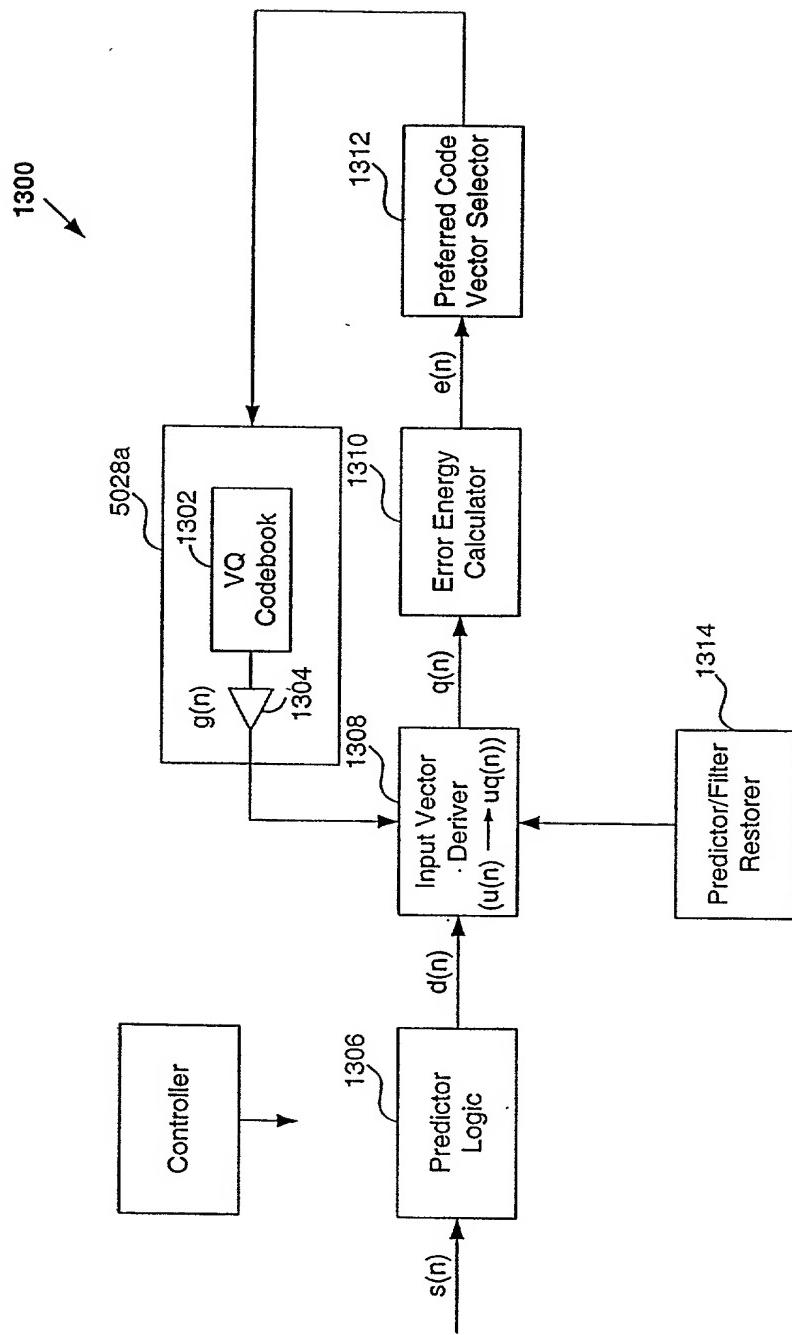


Figure 12 Prediction residual quantizer (block 30)

0003-56.vsd!15



**FIG. 13A**

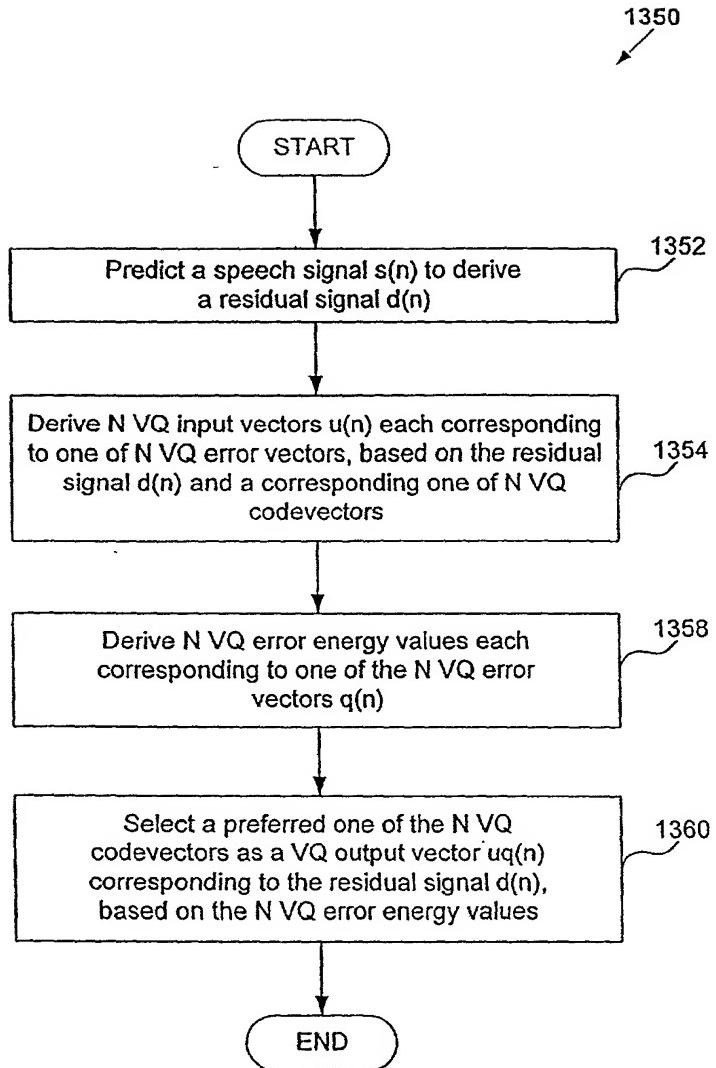
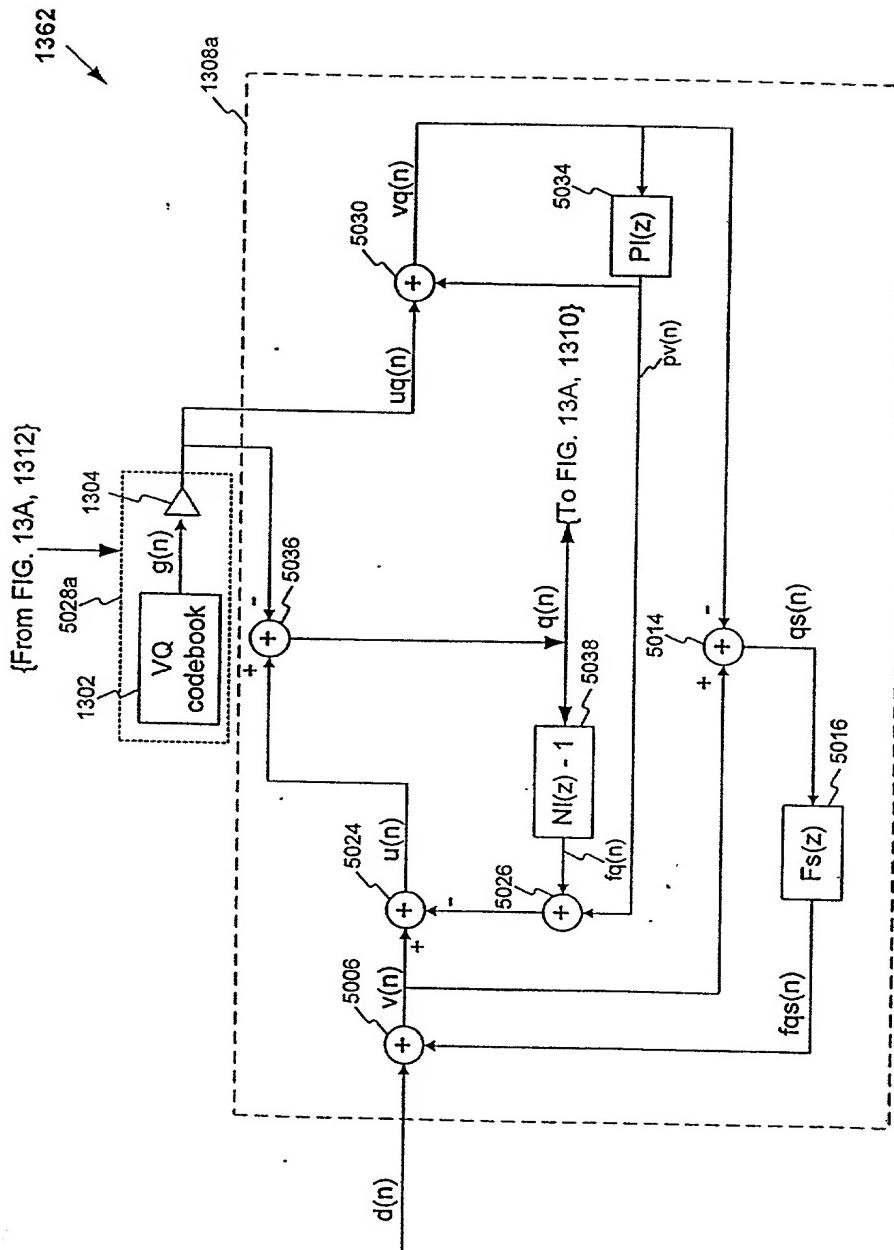


FIG. 13B



The portion of the codec structure that is used in prediction residual VQ codebook search of the two-stage noise feedback codec of Fig. 5.

**FIG. 13C**

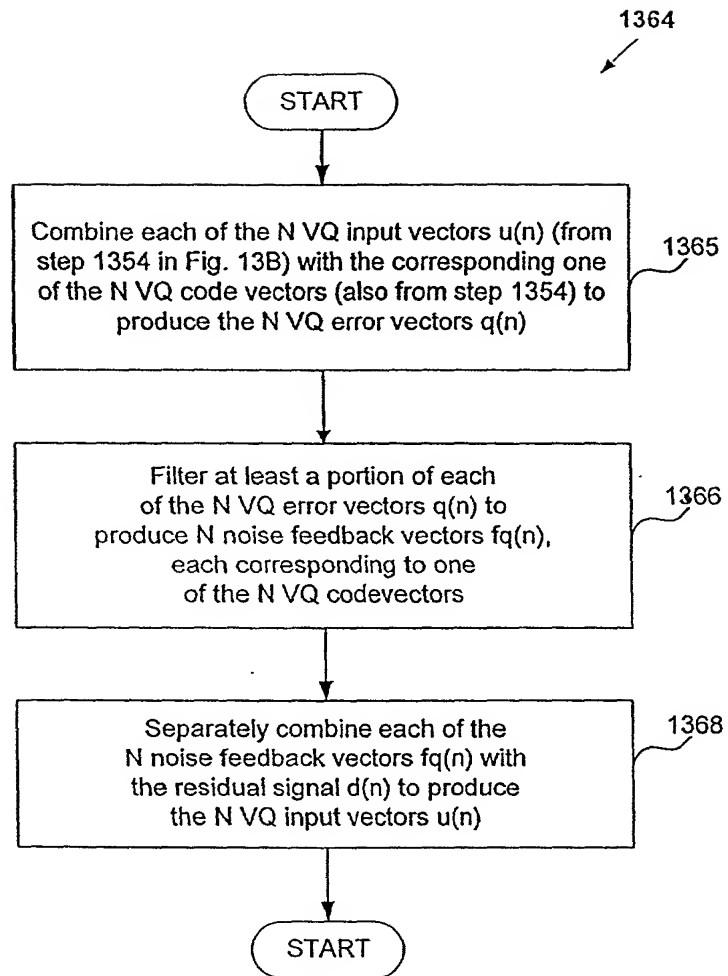


FIG. 13D

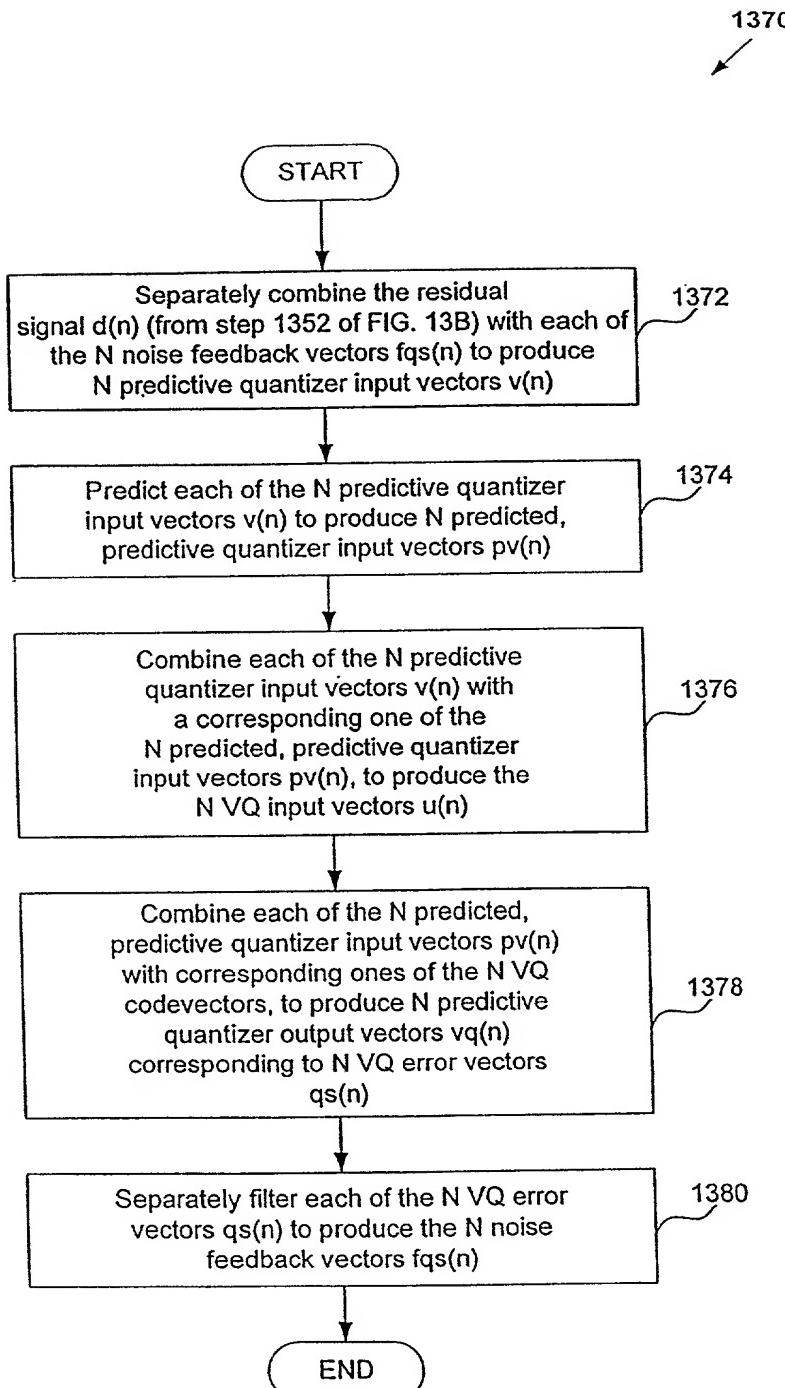
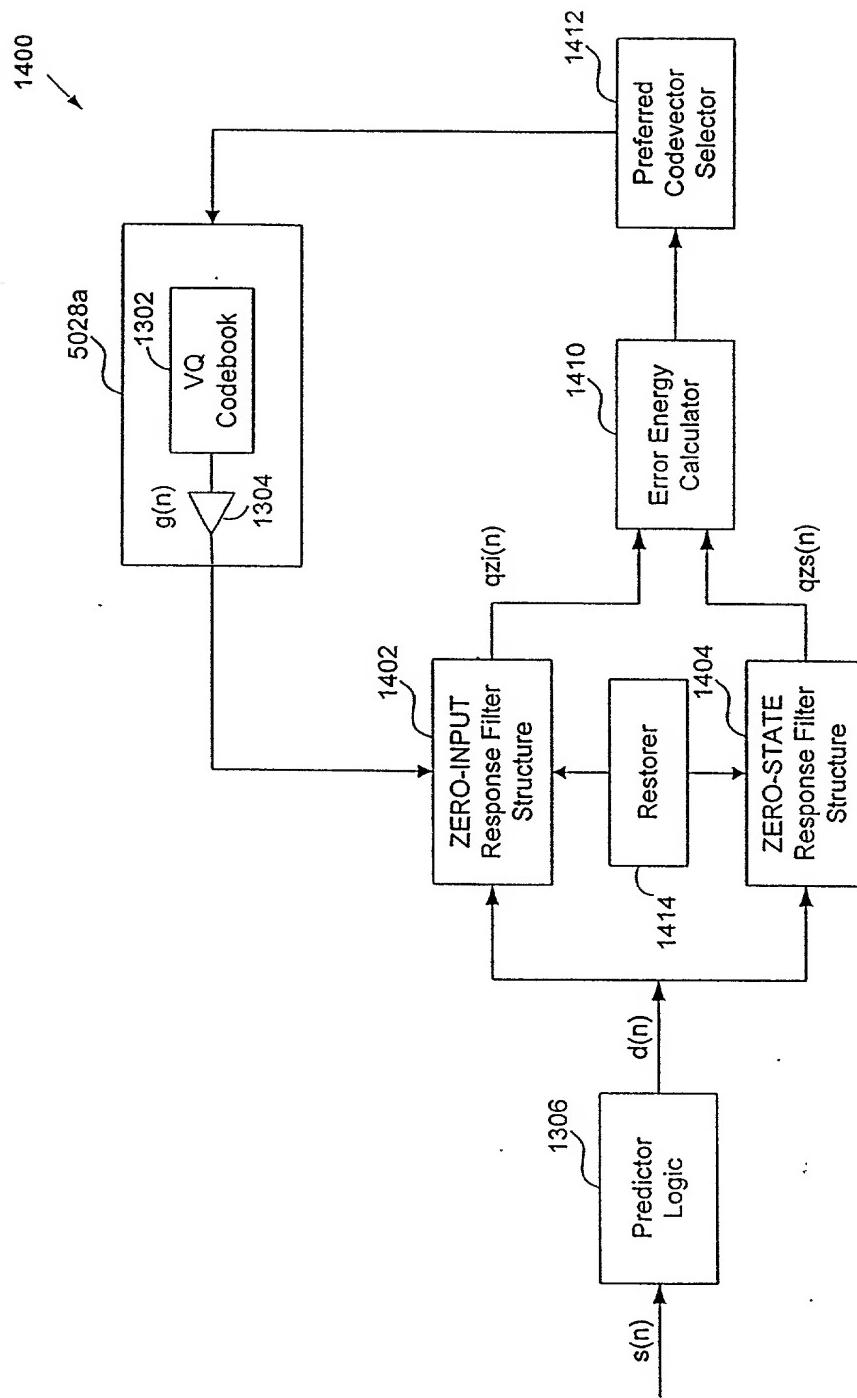


FIG. 13E



**FIG. 14A**

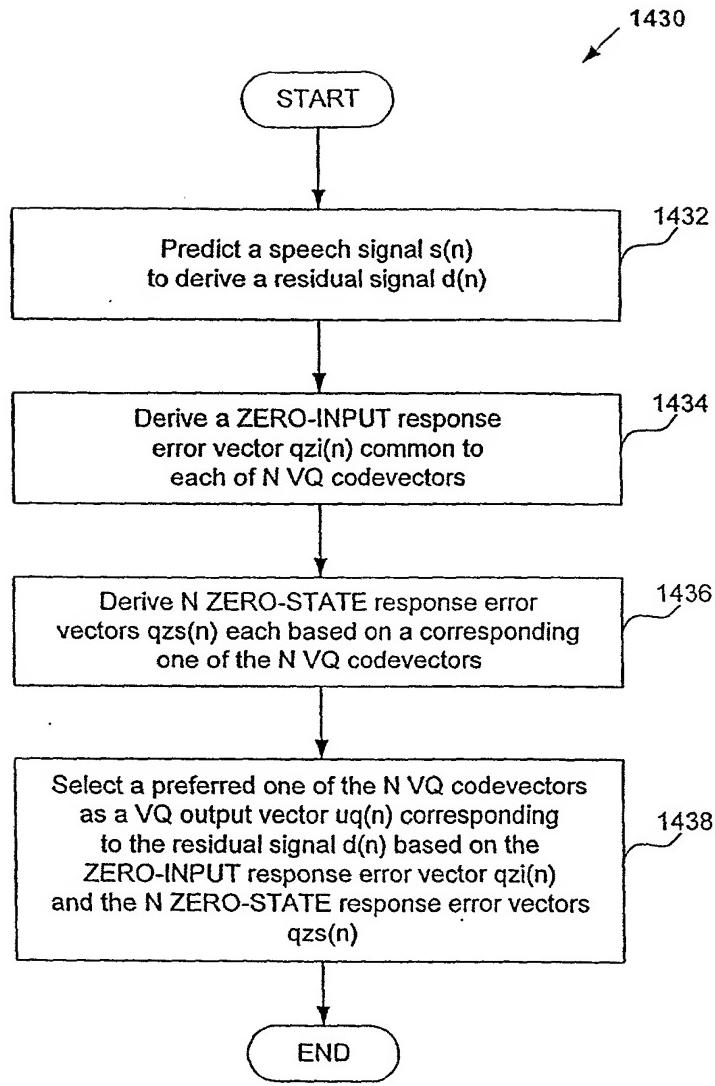
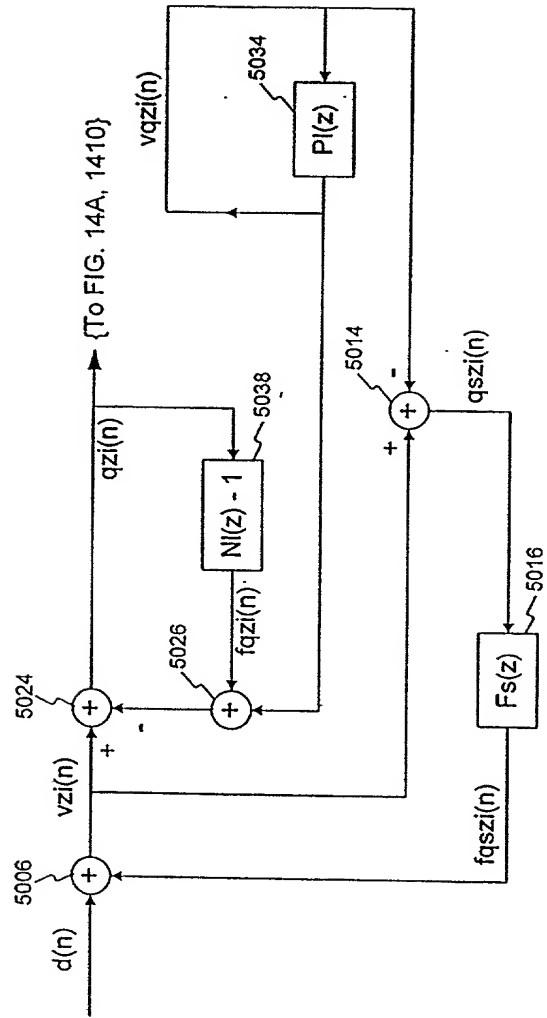


FIG. 14B

1402a



Filter structure during the calculation of the zero-input response of  $q(n)$  of Fig. 13C.

FIG. 14C

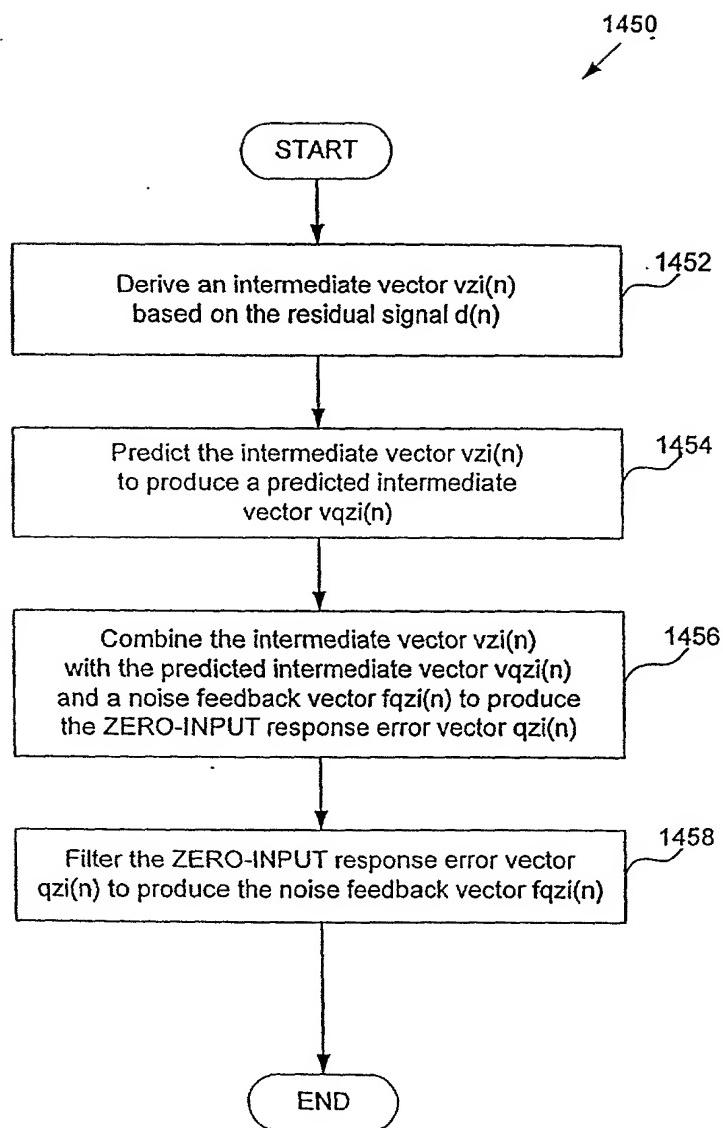
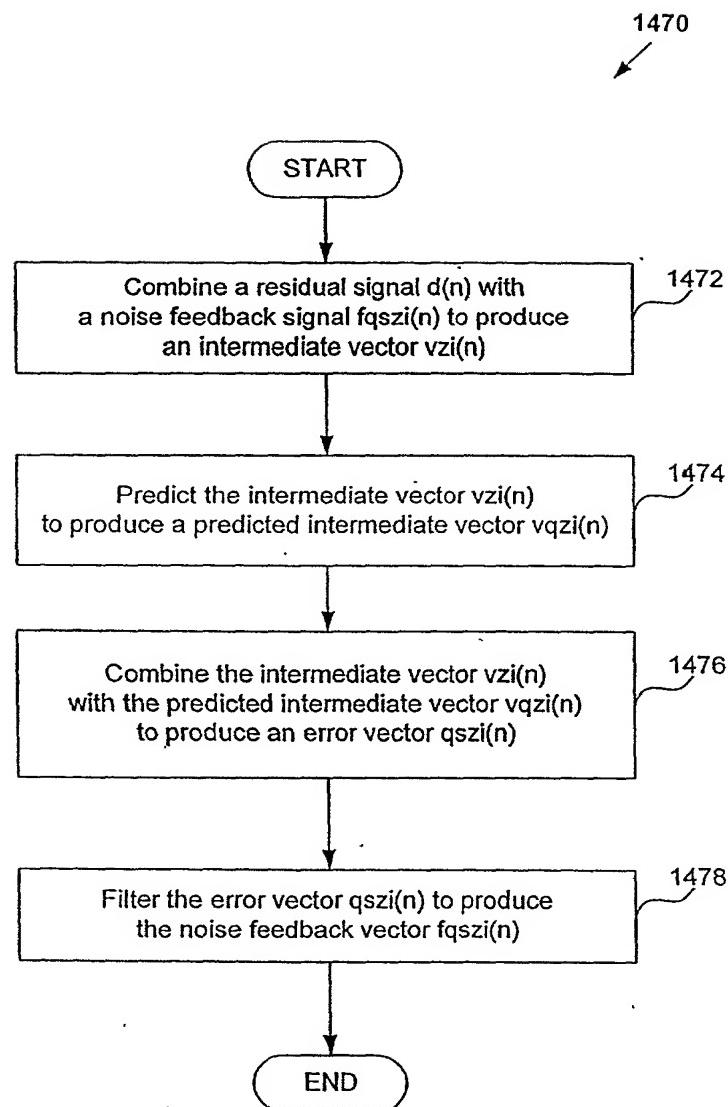
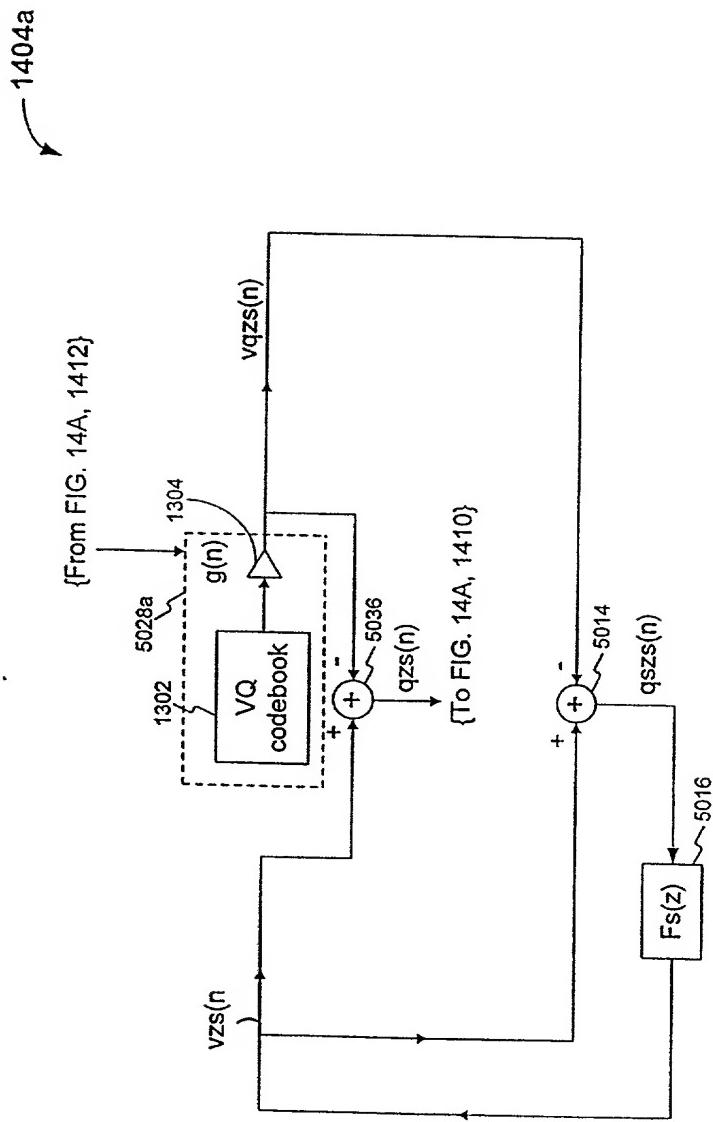


FIG. 14D



**FIG. 14E**



Filter structure during the calculation of the zero-state response of  $q(n)$  in Fig. 13C.

FIG. 15A

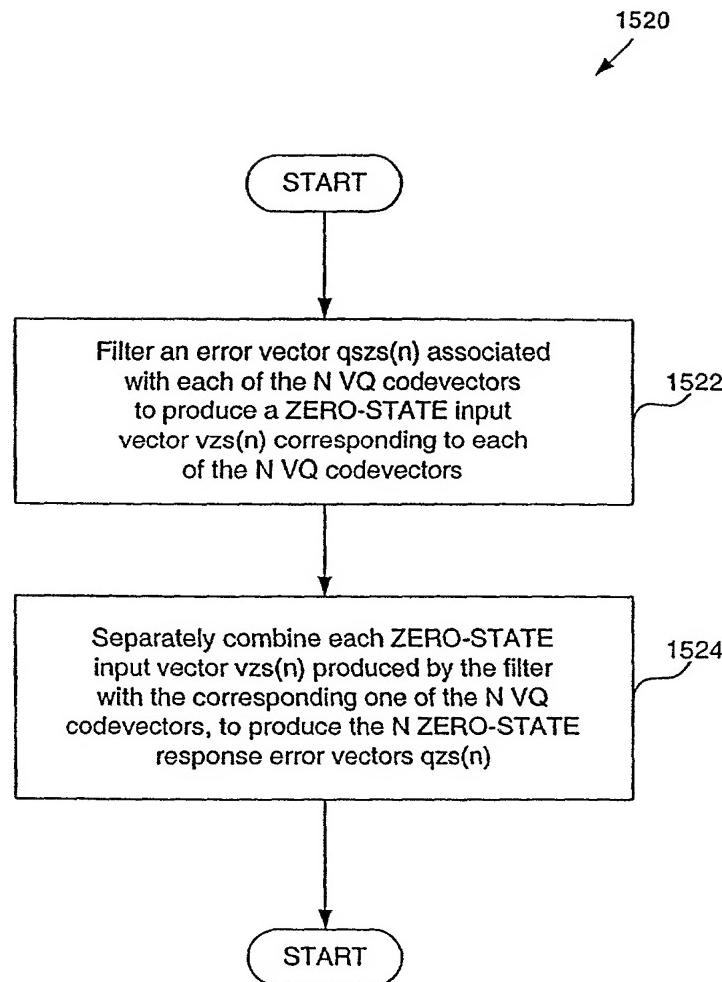
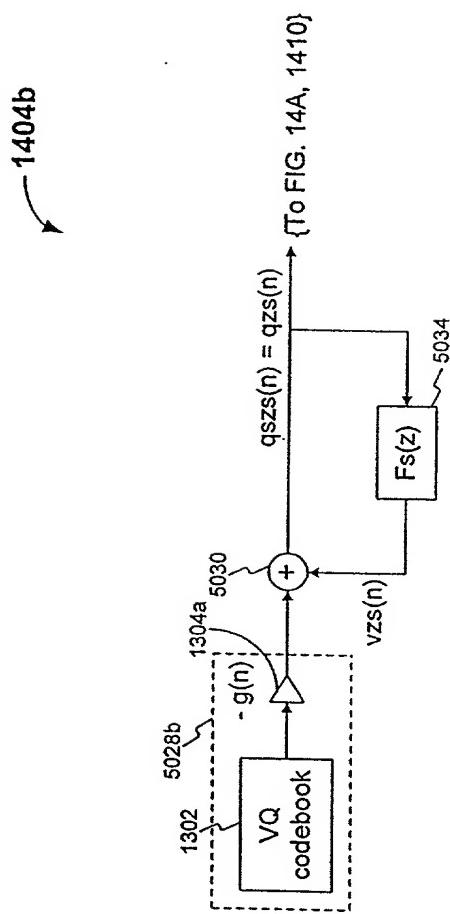


FIG. 15B

**FIG. 16A**

A filter structure equivalent to the structure in Fig. 15A.



1404b

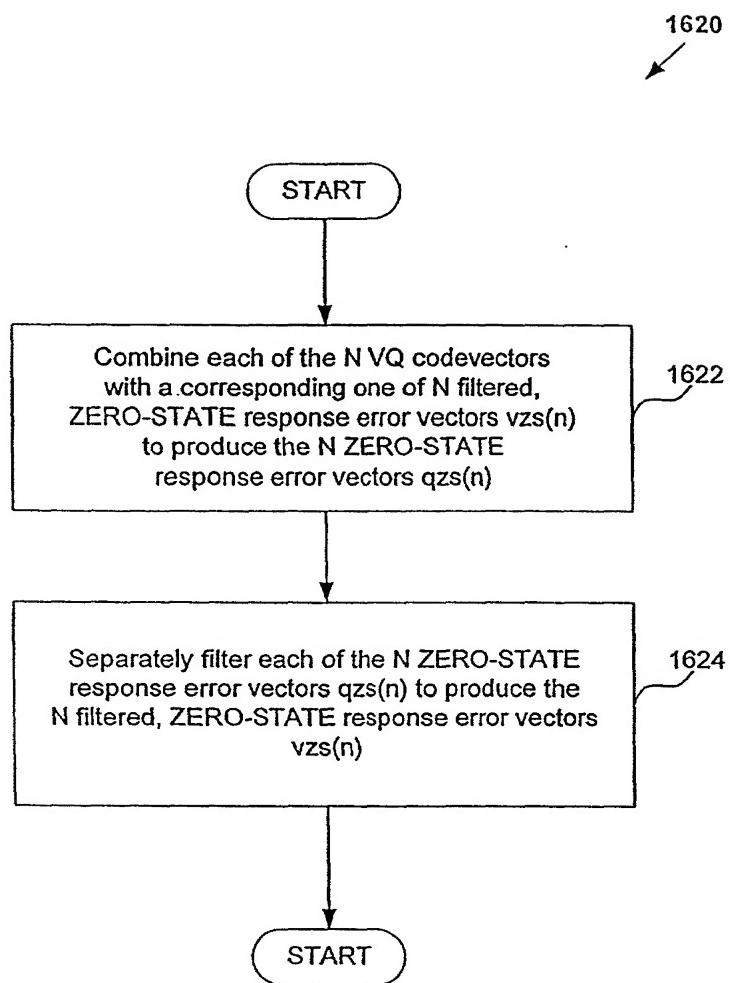


FIG. 16B

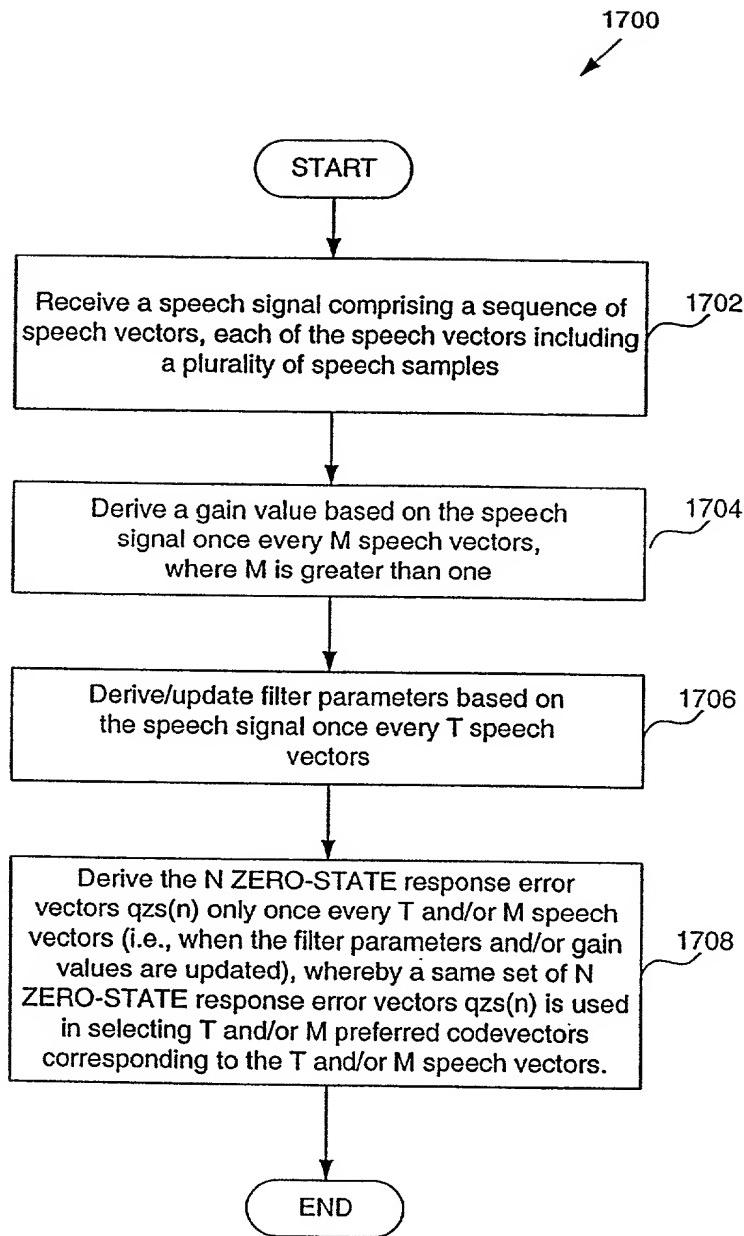


FIG. 17

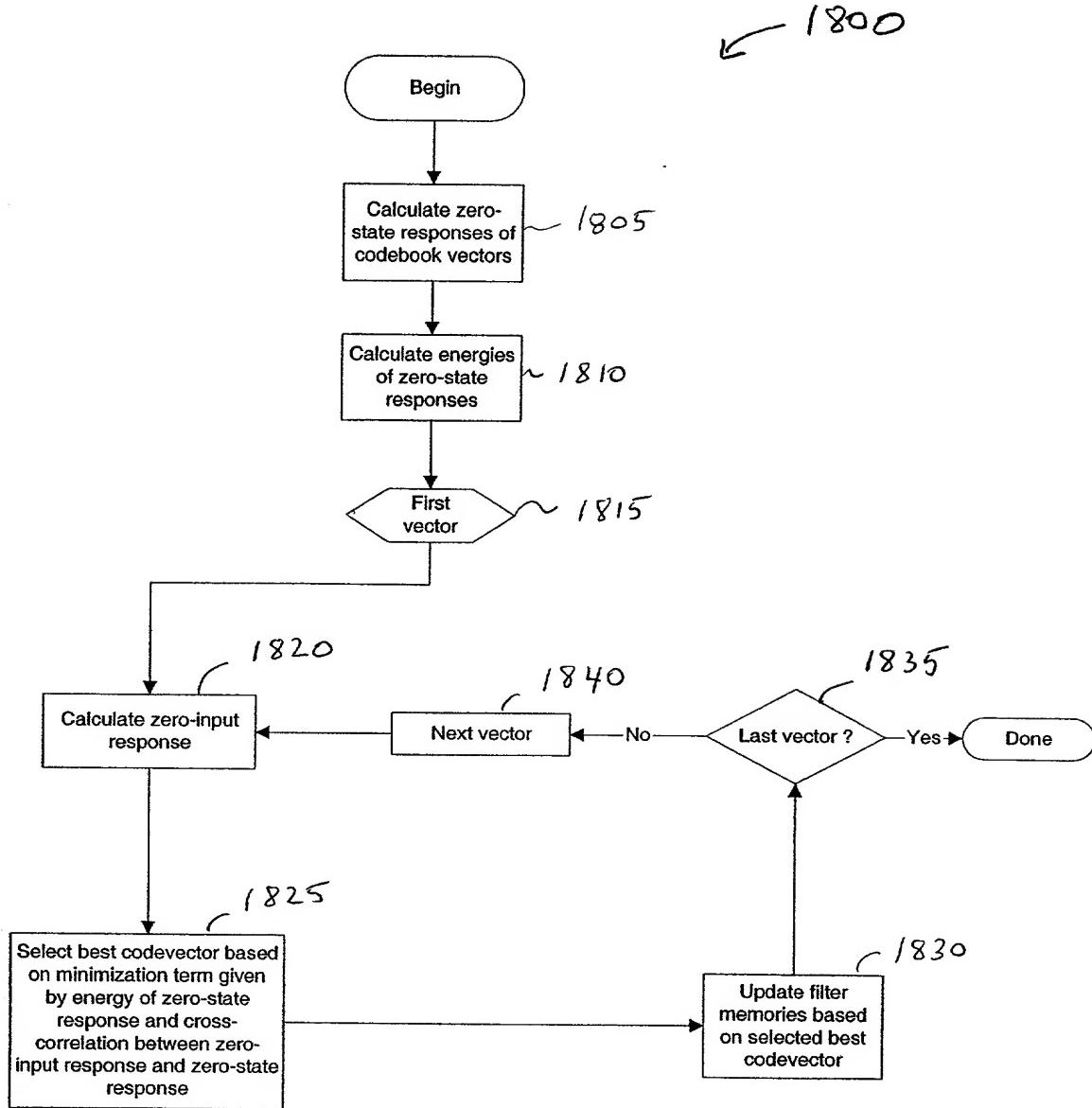


FIG. 18

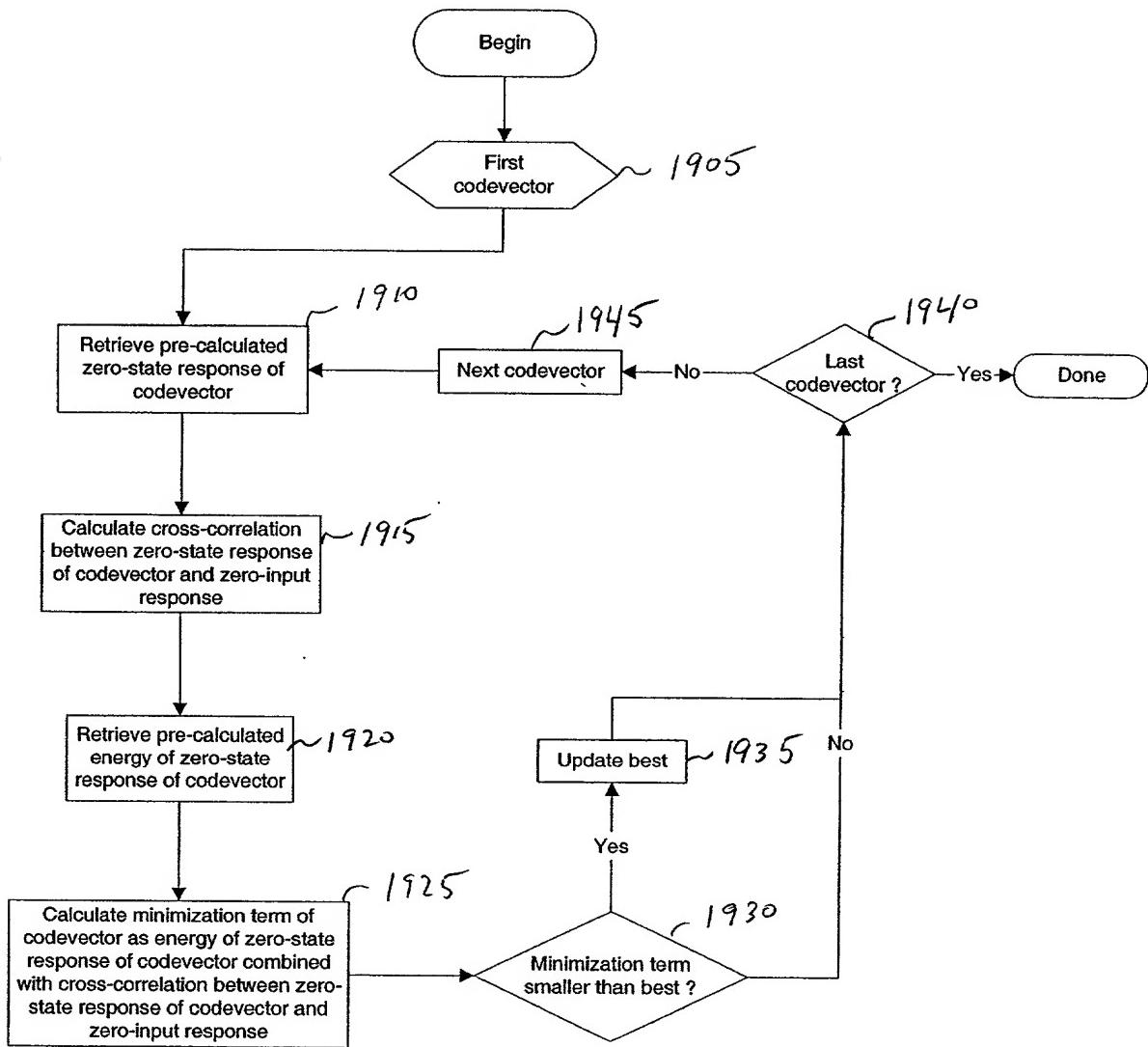


FIG. 19

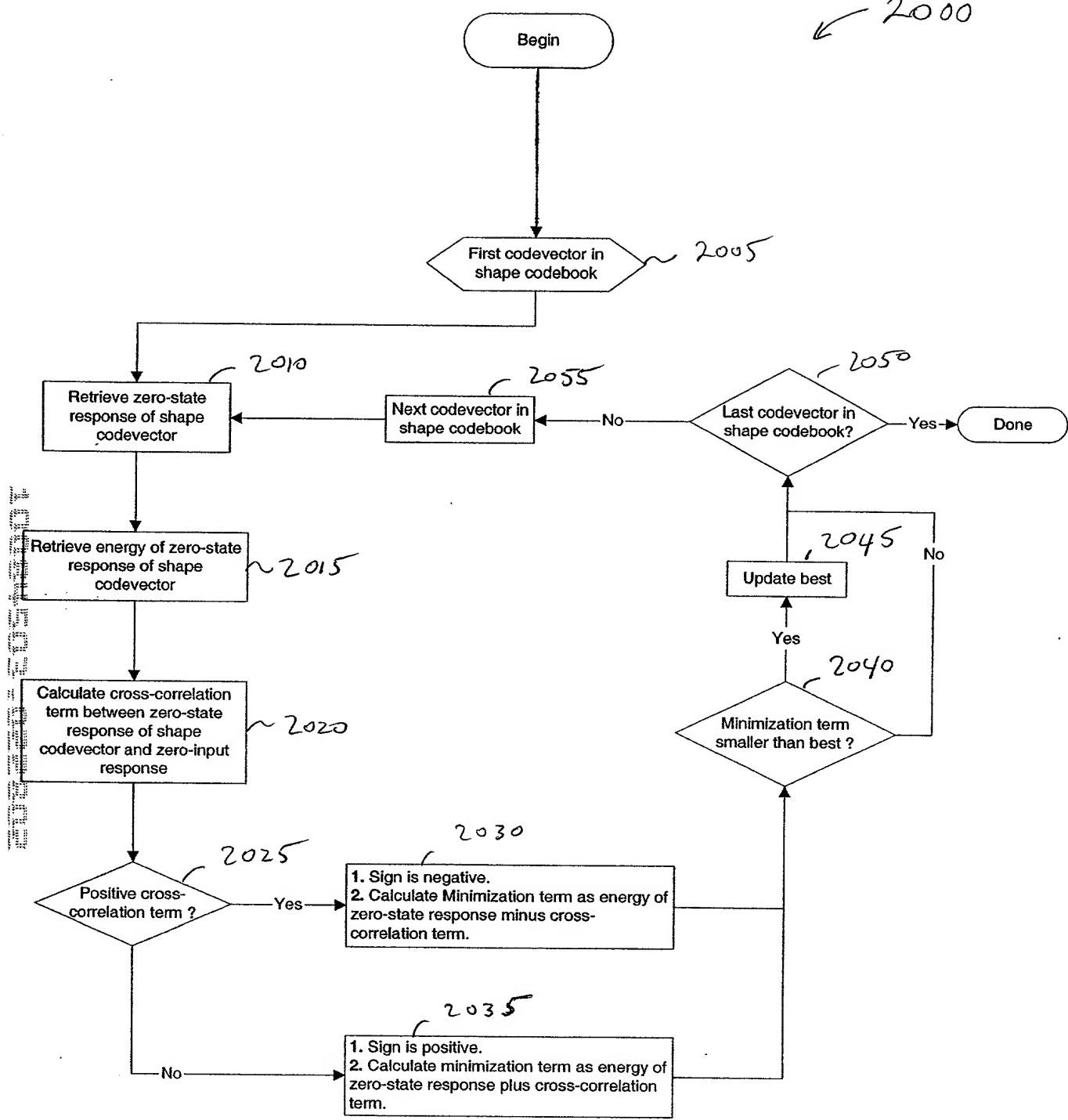
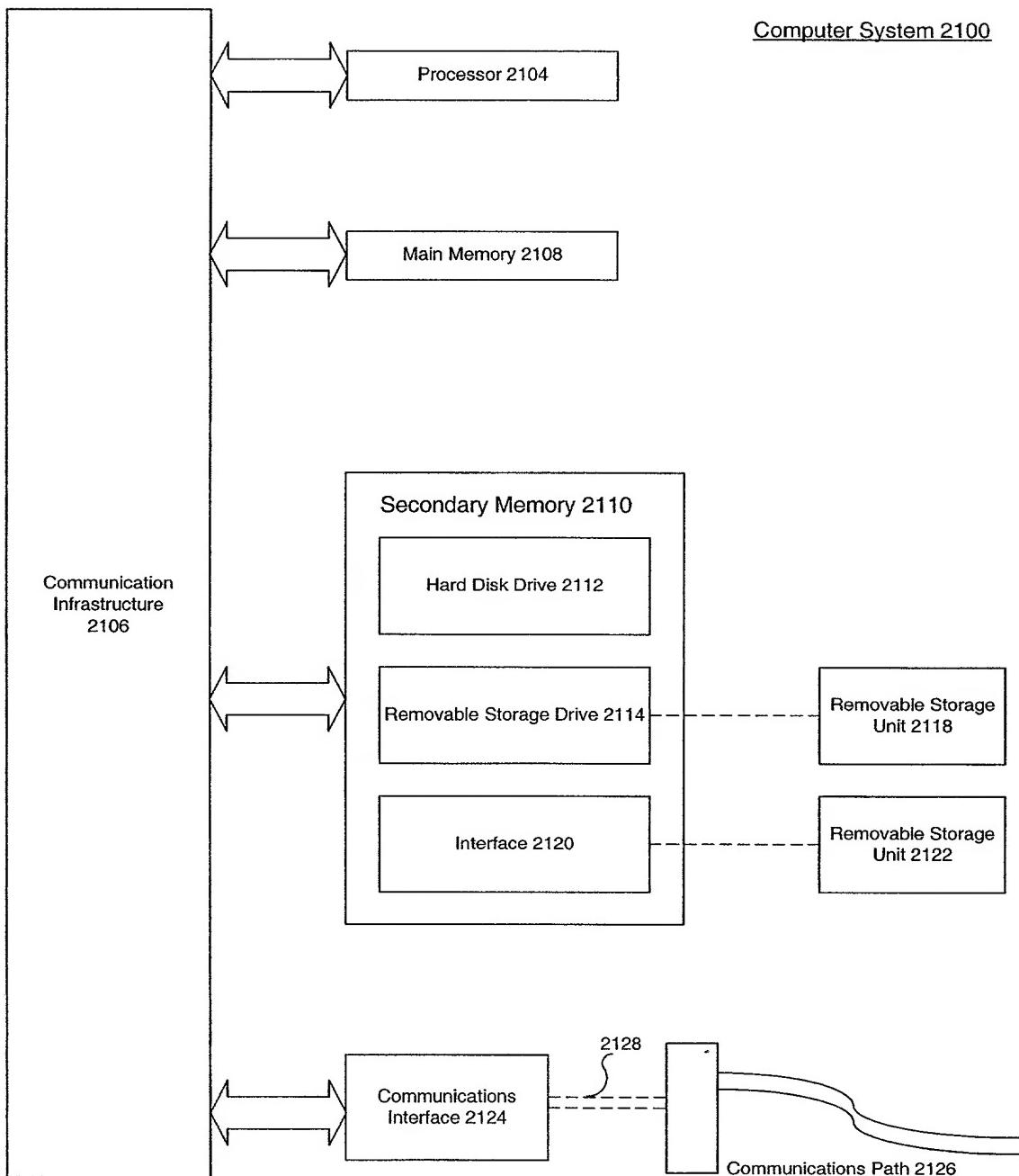


FIG. 20



**FIG. 21**

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